Testing Parameters for Stress Placement: The Case of Dissyllabic Prefixed Verb/Noun Pairs

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Background

The parameters regulating English stress are not consensual, particularly in the case of verb prefixation. However, Descloux & al (2010) showed that it is actually a decisive factor for stress placement in verbs as they are nearly never stressed on their prefixes, unlike nouns.

	/1–/		/–1/		*Total*
	Nb	%	Nb	%	
Suffixed	177	74%	63	26%	*240*
Compounds	245	85%	44	15%	*289*
Prefixed	92	**7%**	1170	**93%**	*1262*
Bases	673	89%	85	11%	*758*
Total	*1187*	***47%***	*1362*	***53%***	*2549*

Dissyllabic prefixed verb/noun pairs present an intriguing stress behaviour which can be divided into three types:

- Verbal: V /01/ and N /01/ e.g. *control* ± 60 %
- Alternating: V /01/ and N /10/ e.g. *record* ± 30 %
- Nominal: V /10/ and N /10/ e.g. *access* ± 10 %

but there is no definite account of their distribution.

Aim:

Test out different parameters to try and explain what makes a pair belong to one of these three types.

Corpus

- Historically prefixed pairs
- COCAE frequency of Verb and Noun superior to 0.5 per 1 million
- Removal of unclear and/or heterogeneous cases:
  - Mixed frequencies (homonyms): *abstract, second…*
  - Semantically separable structures: *dislike, reprint…*
  - Mixed category status of the first element: *bypass, download…*

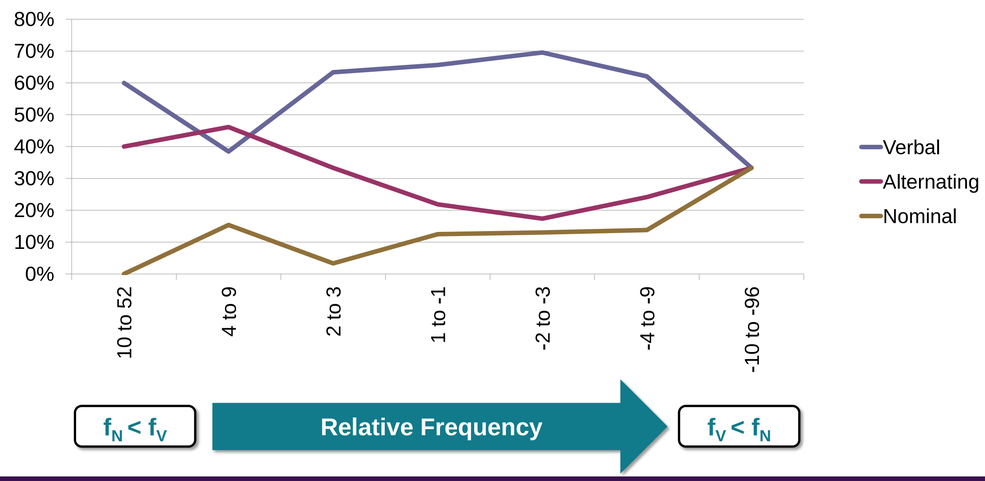
Final corpus:
186 disyllabic prefixed verb/noun pairs

Conversion

Relative Frequency

Does stress type depend on relative frequency?

- The relative share of the **nominal type** increases as relative noun frequency increases, which seems to confirm the hypothesis
- However, the **verbal type** distribution contradicts this first impression: except when noun relative frequency is high, the share of the verbal type does not vary according to verb relative frequency
- The **alternating type** curve does not confirm the hypothesis either, but is also quite intriguing: why would nouns, failing to force their pattern onto relatively more frequent verbs, would at the same time develop a growing resistance to stress shift? We have no suggestion so far.

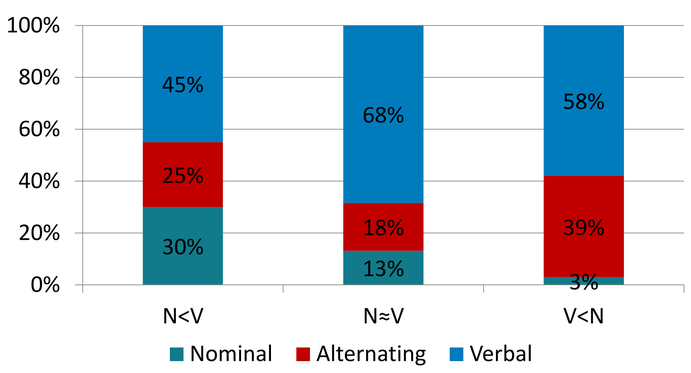


Dates

Does stress type depend on the earlier date of appearance of one member of the pair? (significant difference used: 50 years)

	Verbal		Nominal		Alternating	
N<V	18 **(16%)**	18 **(31%)**	12 **(50%)**	12 **(86%)**	10 **(20%)**	10 **(27%)**
N≈V	52 **(47%)**		10 **(42%)**		14 **(27%)**	
V<N	40 **(36%)**	40 **(69%)**	2 **(8%)**	2 **(14%)**	27 **(53%)**	27 **(73%)**
	110	58	24	14	51	37

Unusable data (difference < 50 years)



Verbal type: the verbs appeared first in 69% of the cases.

Nominal type: the nouns appeared first in 86% of the cases.

Surprisingly, 73 % of **alternating pairs** have V<N (and contrary to expectations, the proportion of unusable data is inferior to both other types)

V<N: when the verb appeared first, we observe a tendency to produce more of the verbal type. However, we have no explanation for the high proportion of alternating pairs.

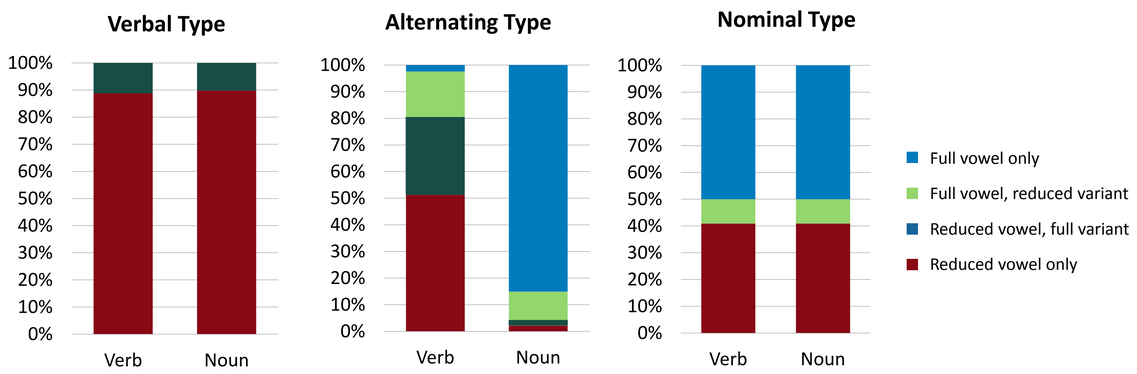
N<V: Similarly when the noun appeared before the verb, we find the highest proportion of the nominal type (30%) ***but*** 45% are of the verbal type nonetheless.

V≈N: when both members of the pair appeared approximately at the same time, we witness a massive domination of the verbal type, even more so than when the verb appeared before the noun.

Segmental hypotheses

Vowel reduction hypothesis

Does a full vowel in the unstressed syllable imply an alternating type?



Alternating Type: the nouns seem to confirm the hypothesis; close to 100% have a full vowel in their unstressed syllable (85% with a full vowel only + 11% with a full vowel as first pronunciation).
But the verbs disprove the hypothesis: only 50% have a full vowel, of which 30% as a secondary variant only
This is confirmed by the **nominal type**: although 50% of the words only have a full vowel, they do not entail an alternating type.

Then, is the difference of full vowels proportion due to the difference of **category**: nouns would favour full unstressed vowels, and verbs reduced unstressed vowels?
The answer is **no** again: when both the noun and the verb have the same stress pattern (verbal and nominal stress types), their behaviour is strictly identical.

What the graphs show is actually a difference between the **first and the second syllable**: indeed the verbal type and verbs in the alternating type are stressed on their second syllable, while the nominal type and nouns in the alternating type are stressed on their first syllable. It seems to us that this difference is probably due to the morphological opposition between prefixes and roots.

Further observations

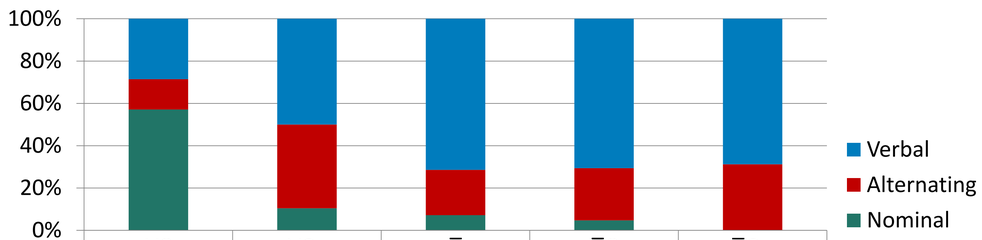
This study led us to formulate two hypothesis based on two observations:

- **Morphological Hypothesis**: we observe that vowel reduction is considerably higher on the prefixes than on the bases and thus that all different morphological units may not be equal with regards to reduction, i.e. prefixes tend to reduce more than bases (similar behaviour found by Guierre in pretonic monosyllabic prefixes followed by C_2, 1979: 253).
- **Vowel Preservation Hypothesis**: we observe that vowels tend to reduce less in the alternating type, which leads us to think that it is the existence of a full vowel in the co-member of the pair which reduces the chances of vowel reduction for that same vowel in the other co-member of the pair. This observation could be compared to "stress preservation" effects, as described by Collie (2007).

→These two hypotheses will need to be tested on larger corpora in further studies.

Final syllable weight hypothesis

Does a heavy final syllable imply more late stressing?



	VC	VC_2	$\bar{V}$	$\bar{V}C$	$\bar{V}C_2$
Verbal	6	24	10	60	11
Alternating	3	19	3	21	5
Nominal	12	5	1	4	0

There seems to be a correlation between the weight of the final syllable and the stress type of the pairs: the heavier the final syllable, the more predominant the verbal type.

A **long vowel** ($\bar{V}$) in the final syllable is most often associated with late stressing. The number of consonants in the coda does not seem to play a significant role in this context.

Short vowel: C_2 becomes significant , though less than long vowels as evidenced by the proportion of alternating pairs (2nd column). VC is the only structure where the nominal type is predominant.

However, these observations might be due to the specific nature of this corpus: Fournier's 2010 study on syllable weight showed that it is not significant for stress placement among a corpus of 5887 dissyllabic roots.

Further considerations

Massive domination of the **verbal model** amongst dissyllabic prefixed units:

	Nouns	Verbs
/10/	347 (81%)	14 (1%)
/01/	78 (19%)	1.018 (99%)
Total	425	1.032

	Nouns	Verbs
Prefixed	425 (9%)	1032 (77%)
Non-prefixed	4416 (91%)	313 (23%)
Total	4841	1345

Guierre's 1979 data: monocategorial dissyllables; compounds not included.

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